134 The taboleiro (upland) soils of this type are in some areas almost sterile, completely unsuited to cultivation. Even the best of the upland Tertiary soils is relatively unproductive. Whether the [132] soils are deep or shallow, the crops grown upon them suffer severely from desiccation during the dry season and during the perennial droughts characteristic of the northeastern interior. The porous [133] character of these sands has restricted the development of surface streams and of erosion in the centers of the taboleiros. On the edges the exposed slopes of the taboleiros have been gullied deeply.

Two contrasting soil types are found in the valleys. Sands carried from the uplands have mixed with fresh materials and with small quantities of humus and have produced more fertile sandy soils. These alluvial soils are much more intensively used than those of the taboleiros, but cultivation is hazardous because of frequent flooding. Where the main streams--such as the Rio Inhambupe--have cut deeply they have exposed the underlying Cretaceous series. In these deeper valleys the soils are very similar to those of the larger Cretaceous zone to the south.

The boundary between the zones of Tertiary and Cretaceous soils is broad and irregular. The surfaces of the interfluves are covered with Tertiary sands; the deeper valleys have Cretaceous clays. The wide boundary zone has never been mapped in any detail; therefore the location of the common border on the map of this study can be drawn only approximately. A few Tertiary sands are found in the crystalline zone to the west--these will be discussed below.

Soils of the Crystalline Zone. The geologic and topographic maps which are available for the Recôncavo are a useful guide to the distribution of soils derived from sedimentary deposits. However, in

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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241 The different cultivation practices of the agricultural systems associated with the soils zones seem likely to intensify the present soils pattern. If commercial fertilizer is used on an increasing scale in the Cretaceous zone and if intensification of cultivation continues in the crystalline--as seems possible--the differences between these soils will be accentuated. It is apparent in any case that significant regional differences in soils will be a continuing feature of the Recôncavo for some time to come.[18]

• 132

Climate

Introduction. The northeast of Brazil is an area of tropical climates, without frost except in a few interior highlands, and without pronounced seasonality of temperature. The margins of the sea are generally humid; the interior is dry. Usually the humid maritime belt is narrow, and the transition to the drier Northeastern interior is very rapid.[19] The profound climatic differences between the coast (the praia or beach) and the interior (the sertão) are reflected in the contrasting economies--coastal cultivation and interior livestock industry--and in the deep social gulf which separates the people of the coast and the interior. "The two Northeasts," Freyre calls these contrasting physical and cultural zones.[20]

Along the central coast of Bahia the transition from humid littoral to dry interior has an irregular character, due to the presence of the Serra do Mar (here called the Serra da Papuã) to the ocean south of the Recôncavo. The mountain-backed southern coast is more humid than the lower northern shore. The coastal humid zone is carried inland around the littoral of the Bay.

The temperature pattern of the Recôncavo is relatively simple.[21] The mean annual temperature at Salvador is 25° C. and at Cruz das Almas (the most interior weather station in the Recôncavo), 24° C. Neither

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132 station has an annual range of more than 7° C. The average daily minimum for the brief record of Cruz das Almas is 19° C.--the average maximum, 28° C. The absolute minimum recorded temperature was 13° C, while the absolute maximum was 37° C. These data for Cruz das Almas are probably typical of the interior section of the Recôncavo. More narrow ranges between maximum and minimum temperatures are characteristic of the coast. The mean deviation for the region--since Cruz das Almas is probably representative of the most variable situation--is less than 5° C. From the foregoing it is apparent that winter and summer have little meaning in the Recôncavo in terms of absolute temperatures.

Sensible temperatures are more variable, for they depend upon humidity, sunlight, and winds as well as upon absolute temperature. In the interior, outdoor activity is reduced during the cooler wet season and also during mid-day in the hot dry season. Wind exposure becomes very important, and those locations where the even flow of the trades is uninterrupted are preferred for dwellings, especially in Salvador. On the other hand, humid coastal areas which are cut off from the trades--such as the "lower city" of Salvador--often are very oppressive.

132 133 Annual Precipitation. The uneven seasonal and areal distribution of rainfall in the Recôncavo contrasts with the relatively uniform distribution of temperatures. With insignificant exceptions, any traverse from the coast to the interior passes from a humid to a less humid zone. Thus the outline of the coast, including the indentation of the Bay, is generally reflected in the distribution of precipitation. In addition, the coast north of the Recôncavo is distinctly less humid than the mountain-backed southern coast, and this general transition also is reflected in the rainfall pattern of the Recôncavo, as may be seen on the map of mean annual precipitation.

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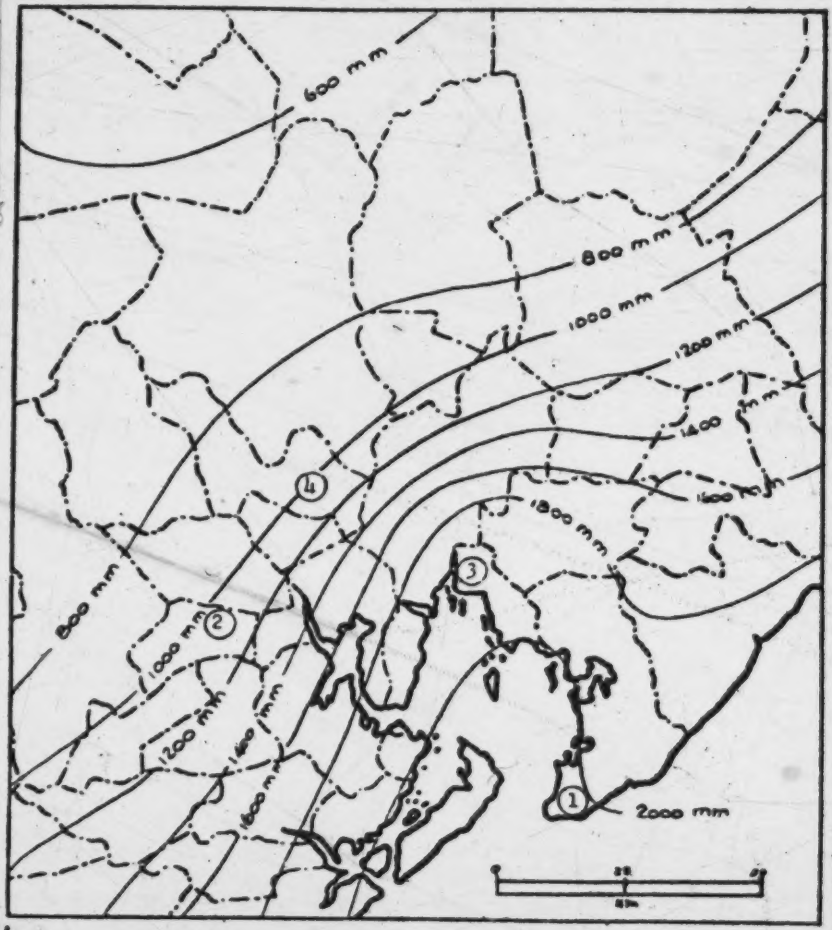

RECÔNCAVO OF BAHIA

Mean Annual Precipitation

Meteorological Stations:
1 - Salvador. 2 - Cruz das Almas. 3 - São Bento das Lajes. 4 - São Gonçalo.

MAP 7

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

132
133 Most of the lowland margins of the Bay have an estimated precipitation of from 1800 to 2000 mm. It may be inferred that the steep slopes rising from the ocean and the Bay have somewhat more rainfall and that some of the sheltered areas, such as the head of the Bacia do Iguape, have less. These inferred differences in rainfall do not seem to be great enough to have produced detectable contrasts in the natural vegetation or in cultivation practices.

The northwestern sector of the Recôncavo[22] is significantly drier, with less than half as much annual precipitation as the Bay littoral. The rainfall of this dry sector is estimated roughly--there are no weather stations in this area--at 600 to 800 mm. Orographic factors probably do not affect significantly the general rainfall pattern in this zone of tabular hills, but the windward slopes and eastern bases of the monadnocks seem appreciably more humid.[23]

The humid littoral and the sub-humid northwest of the Recôncavo are separated by a very steep gradient zone. Weather data from two stations within this zone, one at the northernmost point of the Bay and the other 21 miles westward, indicate a decline of 48 per cent in annual precipitation.[24] Although the isohyets on the map of annual rainfall are more or less evenly spaced over the transition zone, it is likely that the decline in precipitation is very rapid along the Intermediate Hill zone. The eastern intermediate hills are in moderately heavy coastal forest, but the western hills, like the uplands beyond, are in scrub-forest--presumably these differences reflect a rapid decline in precipitation.

In general, then, the Coastal Plain of the Recôncavo has from 1800 to 2000 mm. of annual rainfall. The Tabular Uplands and the northern Crystalline Uplands have less than 1000 mm. The Crystalline Uplands south of the Rio Paraguaçu have about 1200 to 1400 mm.

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• 132 The Major Wet Season--March through August. From 60 to 70 per cent of the total annual precipitation of the Recôncavo falls in the six-month period from March through August, which is the growing season for most annual crops. Although of different values, the isohyets of the map of the major wet season follow closely those of the annual rainfall map. The margins of the Bay have about 1300 mm., and the dry northwest less than 500 mm. of precipitation during these six months. The scanty data which are available suggest that the decline in precipitation across the narrow transition zone from the head of the Bay westward is greater for the wet season (54 per cent) than for the whole year (48 per cent). This fact, even more than the rapid decline in annual precipitation, may help to explain the sharp transition in agricultural phenomena which characterizes this zone. The [241] eastern edge of this transition zone is, as will be seen, in sugar cane monoculture, and the western edge is in tobacco and manioc under a field-fallow system.

Along the coast about 70 per cent of the annual precipitation falls in this six-month period, but in the interior only 60 per cent. Since this is the only season of regular and relatively dependable precipitation, the drier interior area receives less of its annual precipitation under conditions of high reliability than does the coast.

The precipitation of this season comes from either intermittent heavy showers or slow steady, day-long rains. A day may open with cloudless sky and hot sun. In late morning clouds gather, and there is a quick, sharp shower, followed by sunshine, and then a second shower. This sequence continues until evening. More characteristic, if the period of field investigation for this study was representative, is a slow continuous rain from a low-hanging blanket of clouds, lasting a

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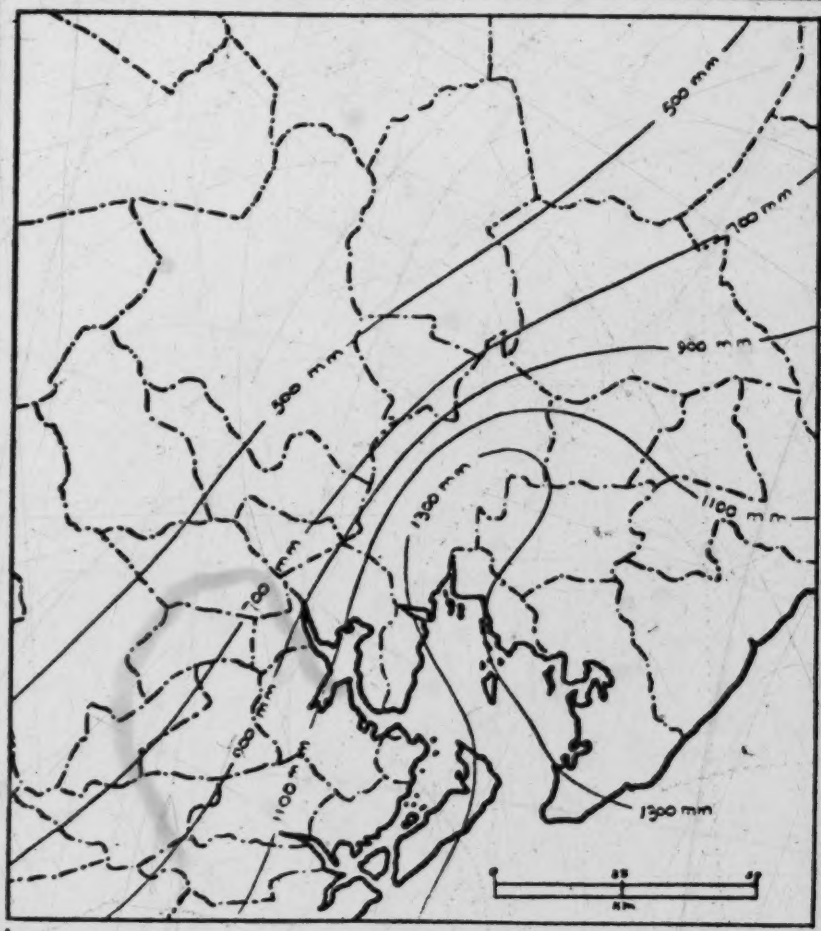

RECONCAVO OF BAHIA

Major Wet Season Precipitation

March through August

MAP 8

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

• 132 day, several days, or even a week. In the interior these latter spells were cool, and the cool, damp weather appeared to restrict the general activity of the people.

Minor Wet Season. In addition to the major six-month wet season, in "summer" much of the Recôncavo has a short season of showers--the trovoadas (thunders) of October, November, and December. These irregular storms are generally confined to the Central and Southern Recôncavo and the coast further south, but they may occur occasionally in all of East Central Bahia. The mean values of isohyets on the map of the minor wet season are not to be taken as actual values likely to be encountered in any particular year--they are the averages of seasonal totals which have an exceedingly large range. These rains usually fall in heavy, irregularly spaced downpours.

At Salvador, and presumably along the rest of the coast, about 17 per cent of the average annual precipitation comes in this minor wet season. In Cruz das Almas, 29 per cent of the average annual precipitation comes in this season, but because these showers are so irregular they are of limited value to agriculture in the dry interior.

Along the coast the rains of this season come in the characteristic tropical sun and shower sequence, separated by long rainless periods. This pattern is also typical of the interior, but here there are occasional heavy violent thunderstorms lasting as long as half a day.

Departures from the Mean Pattern. The real significance of the mean annual and seasonal precipitation totals cannot be understood without reference to the annual and seasonal variations which they mask. In the context of this study the variations are approached as an agricultural rather than as a climatological problem. The

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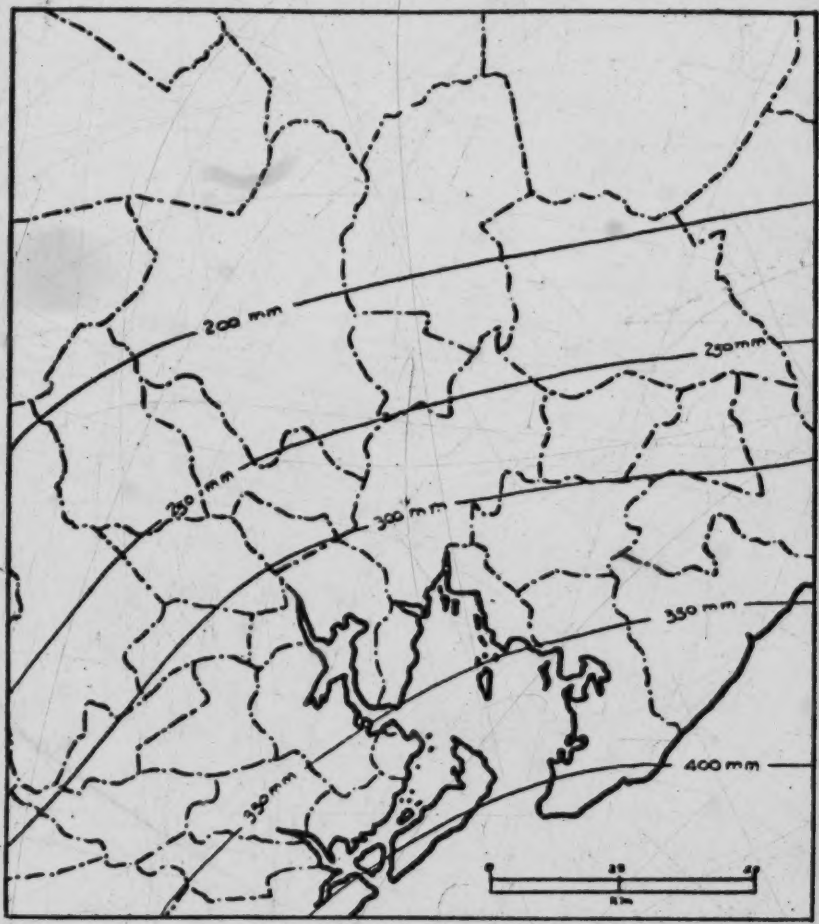

RECONCAVO OF BAHIA

Minor Wet Season Precipitation

October, November, and December

MAP 9

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

agriculturalist responds to rainfall not as a statistical mean but as rain falling from day to day and month to month. It is beyond the scope of this study to analyze the day to day march of precipitation--indeed, the poor data available merit no more than a superficial analysis. By a study of deviations from the annual and seasonal averages, it is possible to draw general conclusions and to qualify the patterns on the climatic maps. The analysis below deals with the two meteorological stations of the Recôncavo with reasonably reliable data--Salvador and Cruz das Almas--and is for the years 1947 through 1952. This span includes both relatively wet and relatively dry years. The accompanying table (Table I) presents the complete summary of mean figures and deviations.

Though the movement of annual and seasonal totals for these two sections was similar, the deviations from the averages were significantly different, as the accompanying table (Table I) reveals. For the major wet season, Salvador had a mean deviation of 10 per cent, Cruz das Almas of 16 per cent. The greater mean deviation in the interior corresponds to the usual generalization of drier areas having a less reliable (more deviate) rainfall pattern. Thus the farmer of Cruz das Almas, cultivating tobacco and manioc with a minimum of seasonal rainfall, must cope with more serious deviations from the "expected" average than the sugar cane planter in his zone of relatively plentiful rainfall.

Of the 36 wet season months (March-August for 6 years), 14 months had less than 100 mm. at Cruz das Almas; and 100 mm. falling in "well-distributed" showers, is the minimum monthly growing season precipitation necessary for tobacco, the chief commercial crop.[25]

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TABLE I

• 132 SUMMARY OF PRECIPITATION DATA--SALVADOR, CRUZ DAS ALMAS

	1952	1951	1950	1949	1948	1947
			Annual Precipitation - mm.			
Salvador	1846.4	1662.6	1741.4	2343.4	2074.2	2880.6
Cruz das Almas	1010.6	845.8	948.3	1235.3	1319.3	1067.6*
			March-August Precipitation - mm.			
Salvador	1510.0	1355.4	1136.5	1496.6	1645.6	1324.1
Cruz das Almas	567.3	594.3	544.6	737.7	909.4	638.8
			Deviation from Mean of 1411.4 mm. for Salvador and from 665.3 mm. for Cruz das Almas - mm.			
Salvador	+98.6	-56.0	-274.9	+85.2	+234.2	-87.3
Cruz das Almas	-98.0	-71.0	-120.7	+72.4	+244.1	-26.5
			Per cent Deviation from Mean			
Salvador	+ 7	- 4	- 19	+ 6	+ 17	- 6
Cruz das Almas	-15	-11	- 18	+11	+ 37	- 4
			October-December "Trovoada" Precipitation - mm.			
Salvador	297.5	167.2	293.0	464.5	361.2	891.8
Cruz das Almas	429.5	155.4	188.2	367.6	309.5	456.7
			Deviation from Mean of 410.9 mm. for Salvador and from 317.8 mm. for Cruz das Almas - mm.			
Salvador	-113.4	-243.7	-117.9	+53.6	-49.7	+480.9
Cruz das Almas	+111.7	-162.4	-129.6	+49.8	- 8.3	+138.9
			Per cent Deviation from Mean			
Salvador	-28	-59	- 29	+13	-12	+117
Cruz das Almas	+35	-51	- 41	+16	- 3	+ 43

[128] *The records of the Cruz das Almas station begin with April 1947. Therefore, the annual and March-August totals are fictional totals in which the mean January, February, and March figures 1948-1952 have been used.

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

• 132 For the period 1949-1952, inclusive, Cruz das Almas had the following number of rainy days:

March	12 days	June	18 days
April	16 "	July	17 "
May	24 "	August	19 "

Of the 24 months of the wet seasons of these years, three had less than ten rainy days, and four others had from ten to fifteen. Moreover, in the periods March-April and July-August there were a number of cases in which one-third or more of the monthly precipitation fell in one 24-hour period. It is clear that the desirable 100 mm. of well-distributed monthly precipitation is frequently lacking.

In contrast with the major wet season, the trovoadas of October, November, and December show much greater variation—a mean deviation of 43 per cent at Salvador and 31 per cent at Cruz das Almas. These two mean seasonal figures, though mathematically correct, rarely correspond even approximately to the actual seasonal totals of any particular year.[26] Moreover, the totals of particular seasons mask very capricious monthly and daily rainfall patterns. Usually an important part of these minor wet season rains comes as heavy thunderstorms. In 1952, for example, Cruz das Almas had 429.5 mm. of rainfall in the October-December season, of which 344.7 mm. fell in December—120.1 mm. in one day, indeed in one continuous downpour. If the 1949-1952 period was representative, these heavy (over 100 mm.) 24-hour storms are a typical December occurrence. Such rains are a greater threat to agriculture than they are a resource.

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Advance and Retreat of the Wet Season. In agriculture the cultivation calendar is likely to be fixed: the seasons of planting and harvest are often kept without regard to the variation in climate. This is especially so in the Recôncavo, where custom is so compelling an aspect of life. Under these circumstances the timely arrival and

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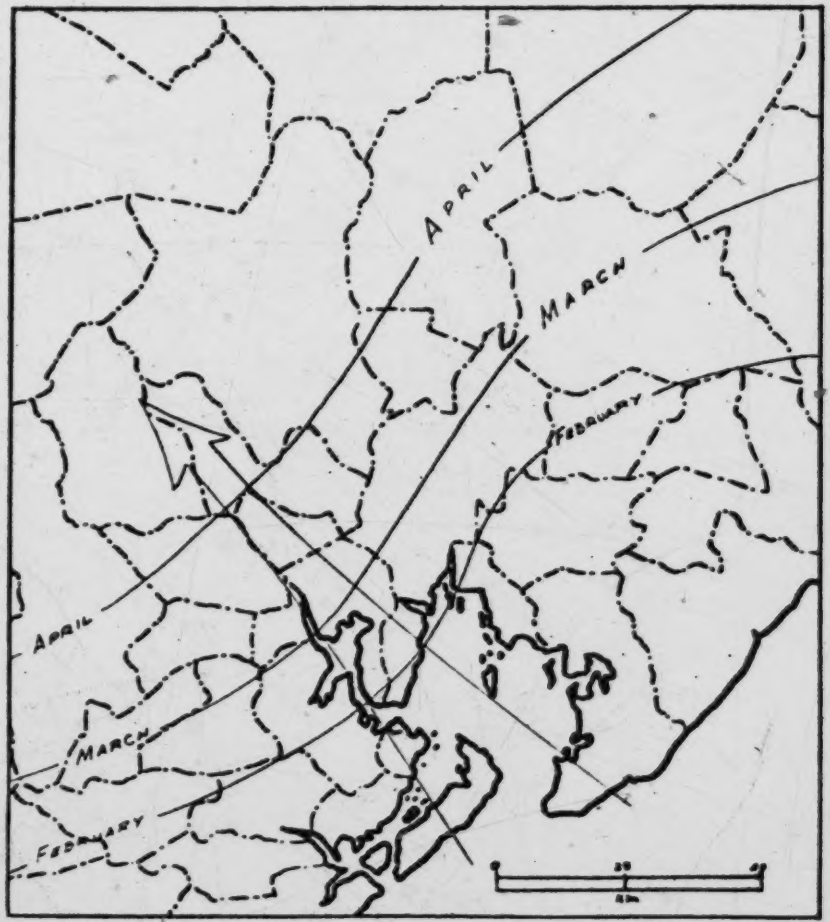

RECÔNCAVO OF BAHIA

Monthly Advance of the Major Wet Season

MAP 10

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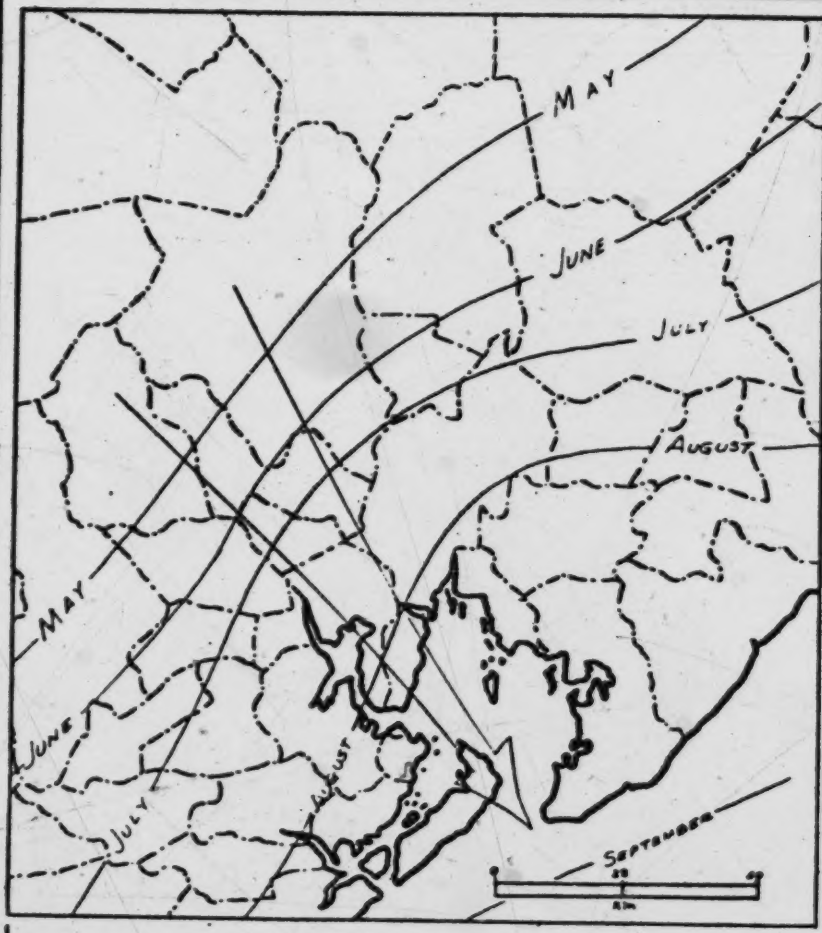

RECÔNCAVO OF BAHIA

Monthly Retreat of the Major Wet Season

MAP 11

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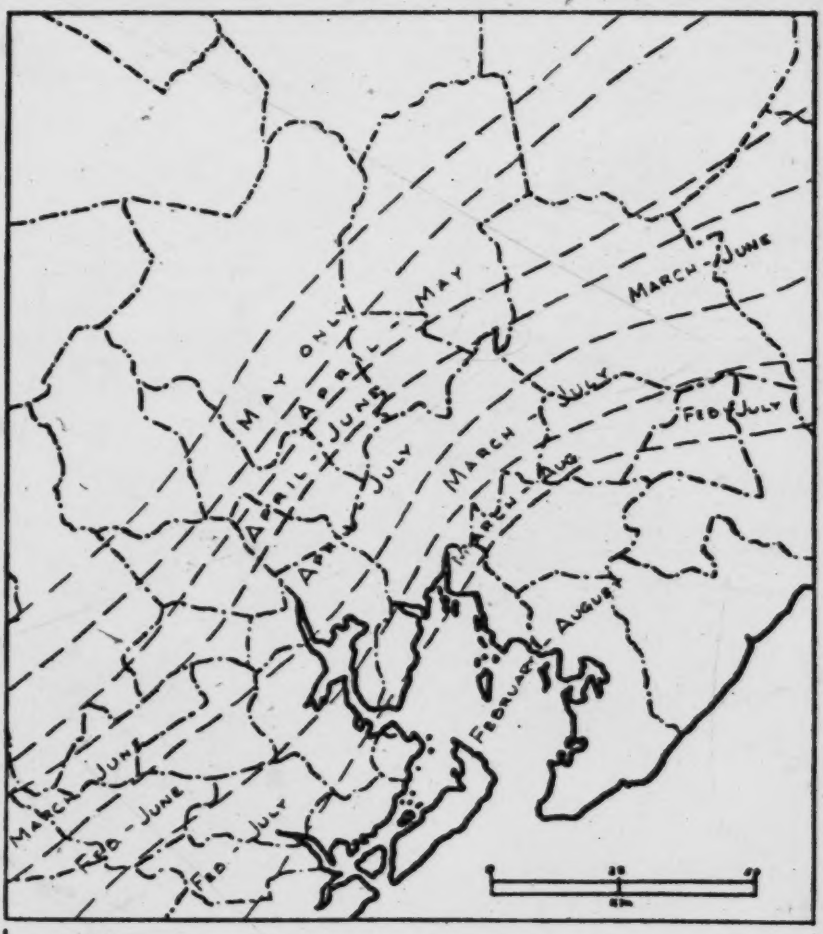

RECONCAVO OF BAHIA

Duration of the Major Wet Season

MAP 12

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

132 [241] departure of the wet season is of great significance. On the accompanying maps the advance, retreat, and duration of the wet season has been plotted in terms of 100 mm. of monthly rainfall.[27]

The wet season, defined as 100 mm. of rainfall monthly, comes in from the sea and crosses the Bay in January-February and moves across the Recôncavo through March and April. In May the retreat begins, and by September the wet season is over.

By combining the isopleths indicating advance and retreat it is possible to derive a map showing the duration of the wet season. On this basis the northwestern sector of the Recôncavo has no wet season or has only one month--May. The southern Crystalline Uplands have a wet season of three, four, or five months--April-June, April-July, or March-July, the shorter season occurring in the most interior section. The Tabular Uplands have two, three, or four months--April-May, April-June or March-June--of wet season. Most of the coastal lowlands have a seven-month--February-August--wet season.

The wet season outlined on the accompanying maps is the statistical mean of the wet seasons of six years--1947 to 1952. The accompanying table (Table II) shows the advance and retreat of the individual wet seasons at Salvador and Cruz das Almas. These data suggest that the advance and retreat of the wet season is highly irregular in the area around the Bay.[28] In the interior, if Cruz das Almas is representative, the advance and retreat of the wet season is more regular. However, in every year from 1947 to 1952 there was a dry month--with less than 100 mm. of rainfall--in the midst of the wet season of the interior.

[249] September Precipitation. September precipitation is a critical factor in the harvesting and processing of the two chief commercial

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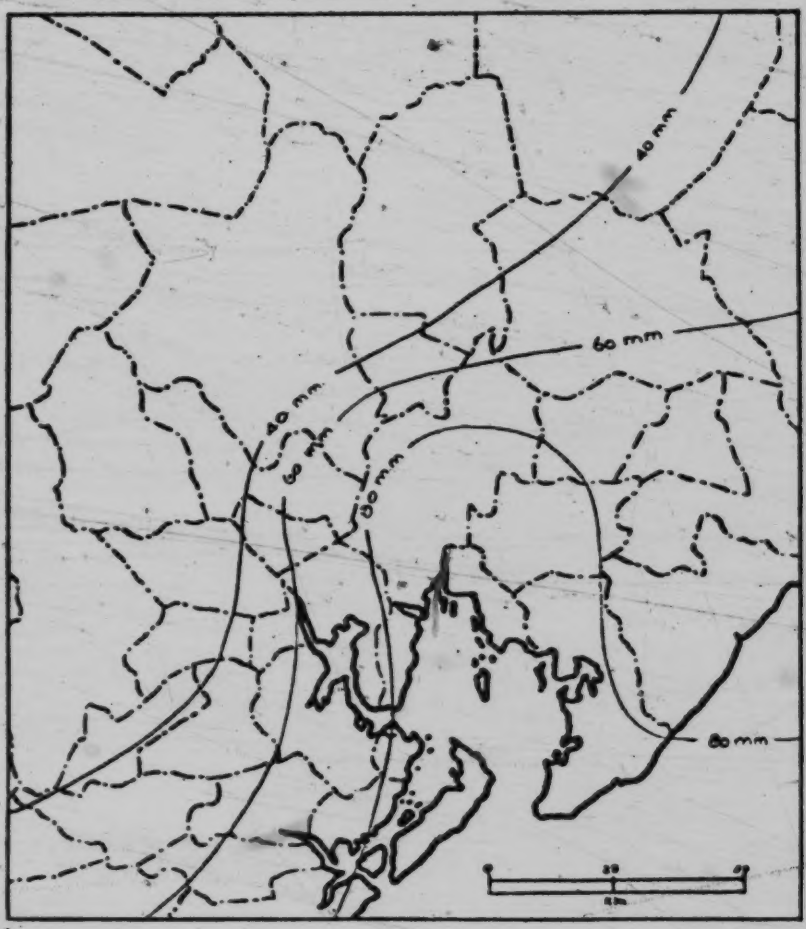

RECÔNCAVO OF BAHIA

Mean September Precipitation

MAP 13

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TABLE II

ADVANCE, DURATION, AND RETREAT OF THE WET SEASON
100 mm. MONTHLY TOTAL FOR SALVADOR AND CRUZ DAS ALMAS

• 132

	Salvador				Cruz das Almas			
Year	Month of Advance	Month with less than 100 mm.	Month of Retreat	Total	Month of Advance	Month with less than 100 mm.	Month of Retreat	Total
1947	March		July	5		June	July	
1948	March		Nov.	9	April	May	Aug.	4
1949	April		Nov.	8	April	May	July	3
1950	Feb.		July	6	April	June	July	3
1951	March		July	5	April	May	June	3
1952	March		Aug.	6	March	April	Aug.	4
Mean	March			6-1/2	April	June	July	4

Note: There are certain discrepancies between these figures and those on the map. This results from the necessity of using mean monthly data on the latter.

TABLE III

SEPTEMBER PRECIPITATION—SALVADOR AND CRUZ DAS ALMAS

	September Precipitation in mm.	
Year	Salvador	Cruz das Almas
1947	37.7	44.2
1948	106.6	41.7
1949	168.1	60.2
1950	32.3	25.5
1951	76.9	62.7
1952	21.5	7.0

132
249 products of the Recôncavo—tobacco and sugar cane. In the tobacco zone there must be enough rainfall so that the shoots will continue to develop but not enough to cause the already-harvested leaves to mold. In the sugar cane zone the moisture-retentive soil will nourish the cane through a relatively dry month. However, too much September precipitation

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[132] [249] will turn the cane fields into quagmires from which it is impossible to move the laden ox-carts.[29]

The table above (Table III) indicates that the September rainfall is highly variable both on the coast and in the interior, although Cruz das Almas has a slightly more consistent pattern for this month. The variability of September precipitation, as will be seen, raises serious agricultural problems in the Recôncavo. However, the greater [249] variability of the coastal zone is in some ways a less serious problem than the lesser variability of the interior, for cane harvests can be temporarily postponed, but the cutting and drying of tobacco has an extremely critical time factor.[30]

Climate - Summary. The climate of the Recôncavo is dichotomous. The temperature of the region is fairly constant from day to day and from season to season. In contrast, precipitation is unevenly distributed--in area and in season--and is relatively unreliable. The cultivator of the Recôncavo may take the temperature for granted, but rainfall is an almost incessant concern.

Along the margins of the ocean and the Bay the climate is humid and the precipitation relatively reliable--it is a rare season when the crops of this zone suffer from drought. Because of the heavy investment [249] [257] in industrial equipment and labor, a long delay in harvest is costly to the sugar industry.

In general the uplands have marginal precipitation. Beyond the [241] Recôncavo, in the sertão (backland) crop cultivation is scattered and precarious, chiefly on account of the low and uncertain rainfall. Although the uplands of the Recôncavo have more total precipitation than [241] the sertão, they share in the pattern of uncertain rains. Several areas in these uplands are intensively cultivated, and the recurring severe

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132 241 droughts and unseasonable heavy rains fall upon valuable, and vulnerable, field crops. Moreover, the cultivators of the Uplands are characteristically small farmers without large financial resources, so that the social repercussions of bad weather in this area may be marked.

311 137 [241] Wild Vegetation. Wild vegetation is a significant element in the landscape and an important resource for agricultural production in the Recôncavo. In 13 of the 21 municipios of the region, over 10 per cent of the total area, in 1940, was in mata, or forest, which was used as an agricultural resource.[31] In the southwestern third of the Recôncavo as the accompanying map indicates (Map 14), almost one-fifth of the total area was in this "exploited mata." It is inferred, through the addition of "unused and non-productive" land to the "exploited mata," that well over one-half of the total area of the Recôncavo was in wild vegetation.

137 192 In east-central Bahia three terms are used both colloqiually and professionally to designate the wild vegetation: (1) Mata is used generally to refer to the littoral evergreen forest of the Brazilian east coast. (2) Caatinga refers to the semi-deciduous scrub-forest of the northeastern Brazilian interior. (3) Agreste designates the transitional forest, intermediate in structure and position between the mata and the caatinga.[32]

137 Vegetation Types. The narrow coastal plain of eastern Brazil, from the Rio Paraíba—in eastern Rio de Janeiro state—to central Bahia, bears a heavy evergreen forest or selva.[33] The northern end of this forest belt is the Baía de Todos os Santos. Although the trees are lower and the species somewhat less diverse than in northern Brazil, the littoral forests of the Recôncavo and the Bahian coast farther south are a characteristic variation of the "tropical rain forest."

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1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

137 not unique to the coast of northern Bahia--it extends northward along the littoral almost to Cape São Roque, with the Recôncavo forming its
[233] southern limit. In Bahia the grazing value of the agreste is not great, since the grassland areas consist of small and scattered patches and since there are relatively few herbaceous plants which are palatable to grazing animals.

The characteristic vegetation of the dry interior of the Northeast is the scrub forest, called caatinga or, sometimes, sertão.[34] Compared with the agreste, the grassy patches are more extensive, and the trees are lower. The tall vegetation of the scrub forest consists of thorny, xerophytic, deciduous brush and low trees and of low palms, especially the licurí (Syagrus Coronata). Cacti are very common in the caatinga of Bahia; the tall branched cactus is a very conspicuous element in the landscape, and there are several low, thorny cacti on
[233] the scrub-forest floor. The cover also contains many herbaceous plants which are valuable forage.

137
• 132 Both the agreste and the caatinga show a phenomenal seasonal rhythm in response to the rainfall cycle. During the dry season in the caatinga the landscape is brown, bare of leaves, and hostile with thorns; the only green plants are the cacti. Much of the earth is bare, and its brown is indistinguishable from the bare trunks and twisted branches of the scrub trees. With the first rains a tremendous exuberance of green leaves, coarse grass, and succulent herbs
[233] spring up, and the entire landscape is transformed. During this season the caatinga provides good forage for herds of cattle, sheep, and goats. But this lush season is brief, and soon the caatinga is again brown. In some years there is no rain, and although the stubborn vegetation manages to survive in a dormant state, men and animals must leave for the more humid coastal forests.

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[12] Teixeira, in his "Solos do Recôncavo da Bahia," pp. 36 and 38, gives the following data (here summarized) for the soils of Paranagua, near Rio Fundo in the município of Santo Amaro:

	Per cent		Per cent
Clay	28 - 45	Total Nitrogen	0.224
Lime	19 - 34	Exchangeable Calcium ME	44.8
Fine Sand	23 - 41	Exchangeable Magnesium ME	6.8
Coarse Sand	1.6- 6.5	Clorides	0.011
Residual Humidity	2.6- 5	Phosphorus	0.055
Rock	3.6- 10.7	Potassium Cloride	0.585
Water Capacity	40 - 58	Sodium Cloride	1.1577

[13] The Rio Pojuca has a gradient of 1-1351 from Catuipara in northern Santo Amaro to the cidade of Pojuca, near the point at which the river enters the crystalline. The Rio Traripe has a gradient of about 1-125 for its last 10 km. before entering the Bay. Its valley is deeply incised, with deep gullies on the slopes.

[135] [14] These rock fragments, usually much weathered, almost invariably were identified as either gneiss or granite in the exposures observed in the field.

[15] Teixeira, op. cit., pp. 31-39.

[16] Bondar, op. cit., p. 256.

[17] One of the islands of the group pendant to the middle of the north coast.

[171] [18] Thus this part of Brazil is not like many areas in the United States, where relatively uniform cultivation practices are conspicuously minimizing soils differences.

[114] [19] According to the Köppen system of classification the coastal Recôncavo has an Af (tropical rainforest) climate, and the interior an Aw (tropical savanna) climate. According to the Thornthwaite system, all of the Recôncavo has a C1'w (subhumid tropical with winter rainfall deficiency) climate. Glen T. Trewartha, An Introduction to Climate (New York: McGraw-Hill, 1954), plates II and III.

[20] Gilberto Freyre, Nordeste (Rio de Janeiro: José Olympio Livraria Editora, 1937), pp. 9, 21.

132 127 [21] Official data from government weather stations was available for only four places in the Recôncavo--Salvador and São Bento das Lajes, in the município of São Francisco, on the littoral of the Bay; and Cruz das Almas and São Gonçalo in the western interior. Of these, only Salvador had maintained a continuous record over a relatively long period--including the years immediately preceeding the field study. There were a number of stations in adjacent parts of the state of Bahia, but none were close enough to the Recôncavo to be reliable guides to its climatic pattern.

The data upon which the climatic analysis of this study was based came from three basic sources: (1) Ministério da Agricultura, Departamento Nacional da Produção Mineral, Divisão de Águas Secção de Hidrologia, Atlas Pluviométrico do Brasil 1911-1938 (Boletim #5. Rio de Janeiro: Departamento Nacional da Produção Mineral, Divisão de Águas Secção de

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

127 Hidrologia, 1948). (2) Ministério da Agricultura, Serviço de Meteorologia,
132 Normais Climatológicas (Rio de Janeiro: Serviço de Meteorologia, 1941).
(3) Data made available by the meteorological section of the Instituto Agronômico Léste at Cruz das Almas,

132 The risks involved in using these data are considerable. Of the
127 20 meteorological stations in eastern and central Bahia, only 2 or
114 perhaps 3 are reliable. For the others, gross errors and even deliberate falsification are notorious. Probably the data for Salvador is reasonably dependable, and during the field investigation for this study, there was opportunity to observe the conscientious attention to detail at Cruz das Almas.

The sheer lack of meteorological stations makes it necessary to infer most of the climatic pattern of the Recôncavo. It is fortunate that the two dependable stations occupy relatively representative sites in terms of the terrain and the land-sea relationship. Nevertheless, even the highly generalized climatic analysis of this section is offered with considerable hesitation. It is included in the study primarily as a base for agricultural research and, it is hoped, as a stimulant to a more adequate analysis of weather and climate for the Recôncavo.

000 [22]The municípios of Santo Estêvão, Feira de Santana, and Irará.

[137] [23]Often the slopes are more heavily forested than the surrounding tablelands, but it is not absolutely certain that this difference is unrelated to land use--the slopes are usually too steep for cultivation. In a number of municípios immediately to the east of this dry belt perennial or seasonal ponds were observed at the eastern or southern base of a number of monadnocks. Presumably these ponds are related to heavier precipitation on the slopes above.

[24]The mean annual precipitation of São Bento das Lajes (in the município of São Francisco) is 1947 mm. At São Gonçalo the mean annual precipitation is 1005 mm.

[25]According the advice of agronomists in the area. This approximation is based upon the general experience of the cultivators and not upon controlled experiments which could take into account varying temperatures, humidity, and soil moisture conditions.

[26]The mean of the deviations at Cruz das Almas was 33 per cent.

[249] [27]Except that 100 mm. is considered to be the minimum for tobacco cultivation, this exact figure has no particular significance. It is used here merely as a device to record the movement and duration of the season.

[249] [28]This seems to reflect accurately the climatic situation in the Coastal Plain, where sugar cane is grown, for the cane planters frequently complain of the irregularity of the end of the wet season.

[29]It is not possible to assign strict values for "too much" and "too little" precipitation in these agricultural zones of the Recôncavo. In the tobacco zone there is likely to be difficulty if the precipitation for September--or the following months--the cutting period, falls below

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

TABLE XII

COMPOSITION OF RECÔNCAVO POPULATION 1940-1950

Year	Total Population	Urban Centers	Rural Population	Agricultural Labor Force
		Absolute		
1940	924,032	368,932	555,100	189,967
1950	1,072,452	493,944	578,508	196,468
Change	+ 148,420	+125,012	+ 23,408	+ 6,501
		Relative		
1940	100 o/o	40 o/o	60 o/o	21 o/o
1950	100 o/o	46 o/o	54 o/o	18 o/o
Change		+ 6 o/o	- 6 o/o	- 3 o/o
		Growth of Recôncavo Population		
1940 to 1950	16 o/o	34 o/o	4 o/o	3 o/o
		Per cent of Total Growth		
1940 to 1950	100 o/o	84 o/o	16 o/o	4 o/o

connections with the western section of the Recôncavo. On the other hand, its location combines oceanic access with the rest of Brazil, Europe, and the Americas and a direct approach, via the Bay, to all of the central municípios of the Recôncavo.

The major concentrations of rural, agricultural population in the region are in the outer municípios of the Southwestern, Northwestern, and Northern Recôncavo. In the southwest, there is a notable concentration on the Crystalline Uplands. In the northern part of the Recôncavo, the concentrations lie along the dissected edges of the Tertiary taboleiros. Thus most of the agricultural people of the region live in upland areas of deep, porous soils and marginal rainfall. The only major lowland concentration of agricultural people is in the area of Cretaceous clay soils on the Coastal Plain of the Central Recôncavo. The relatively small size of the agricultural population in this area is reflective of the declining role of sugar cane cultivation in the Recôncavo.

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

249 In addition to these major and minor concentrations of production, there was scattered cultivation in most of the outer ring of municípios of the Recôncavo, especially in Catu, in Alagoinhas, and in Santo Estêvão and adjacent western São Gonçalo. On the other hand, tobacco cultivation was conspicuously absent in the Central and Southern Recôncavo.

249 311 In 1948 tobacco was grown on 27 per cent of the total cropland of the region. The zone of intensive tobacco production, as shown by the proportion of the cultivated land which it occupies, is clearly revealed on the accompanying map (Map 32). In a continuous belt, which follows the humid edges of the Uplands and adjacent Intermediate Hills from Santo Antônio to Catu, tobacco was grown on over 30 per cent of all cropland in 1948. There were extensive areas in which over half the cultivated land was in tobacco—a remarkable showing for a non-food commercial crop grown on a small scale by semi-subsistence cultivators.

The gradients which separate the belt of intensive tobacco production from the Bay littoral and from the Central Recôncavo are very steep. On the other hand, the inland transition from intensive tobacco production to the scattered cultivation of the dry caatinga is very gradual. In the lowlands tobacco almost everywhere occupied less than 10 per cent of the cultivated area in 1948; in the caatinga to the west it was grown on 10 to 20 per cent of the total cropland.

249 134 132 There is a basic association between tobacco cultivation and the Crystalline and Tabular Upland; production is concentrated along the wetter, inner edge of these formations, in a zone which closely corresponds to the forest and scrub forest boundary. Tobacco is practically excluded from the humid Coastal Plain and littoral sections of the Intermediate Hills. It might be assumed that the location of tobacco is a result of the monopolization of the humid, clay-soil Coastal Plain

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

249 by sugar or other commercial crops, but this does not appear to be the
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132 case. There are a few patches of tobacco in the garden plots of sugar cane workers, but the small quantity of tobacco produced in the Central Recôncavo is rank and harsh, despite cultivation practices almost identical with the high-quality areas. Apparently high grade leaf production is excluded by the climate-soil complex of this zone.

Local agronomists and cultivators familiar with tobacco cultivation insist that such areas as Cruz das Almas and São Gonçalo are optimum for tobacco, and certainly the leaf of these areas brings the best price. It is said that the best tobacco in these areas is produced on the "poor" soils of the upland surfaces--leached sandy loams. In the Southwestern Recôncavo the "better" soils--that is, heavier soils found on the slopes and bottomlands--are not used for tobacco, although they produce good yields of corn, beans, or manioc. Precipitation is also a very important locational factor, both indirectly, as an agent in soil formation, and directly, as a source of moisture for the plants. Too little moisture will produce a gummy tobacco which is very difficult to cure. Too much moisture, a rarity in these areas, produces a washed-out, insipid leaf.

A comparison of the maps of tobacco types[16] (Map 138) and of soils (Map 6) and precipitation (Maps 7 and 8) indicates quite clearly that the best grade of tobacco--"Mata"--is grown on the most humid section of the zone of crystalline soils, i.e, the Southwestern Recôncavo and Santo Antônio. This is also, of course, the area of most intensive production. In general this same combination of physical elements is characteristic of the smaller "Mata" area around São Gonçalo.

The second most valuable grade of tobacco, "Caatinga," is grown west of the Southwestern Recôncavo and, within the Recôncavo, in

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

249 Santo Estêvão. The third grade—"Feira"—is grown on the humid edge of
134 the sandy Tertiary uplands. This suggests that it is soil which is the
• 132 immediate control of quality, although precipitation is the over-all factor. Although the southern part of the zone of Tertiary soils is more humid than the crystalline zone peripheral to the Recôncavo, the tobacco of the former--"Feira"—is less valuable than the "Caatinga" grade of the latter. The drier Tertiary zone produces only fumo em corda but the even drier crystalline zone, stretching west to the Chapada Diamantina, manages to produce the cheap but salable "Sertão" leaf. Thus in every case the crystalline soils, with equal or even less precipitation than the Tertiary zone, produce a better grade of leaf tobacco.

249 In 1948 the yields of the main zones of tobacco cultivation were
433 from 750 to 1,000 kilograms per hectare (Map 33). Yields were higher in the Central Recôncavo, where there is only trivial production of low quality leaf. Yields were also higher in isolated sections of the "Sertão" and "Caatinga" grade zones to the west.[17] The mean yield of the Recôncavo, 840 kilograms per hectare, was slightly above the 808 kilograms per hectare of the state of Bahia as a whole. This yield compares very favorably with the yield of Cuba, 640 kilograms per hectare, and Indonesia, 530 to 650 kilograms per hectare on Estates, but is lower than that of Mexico, 1,010, Canada, 1,360, or the United States, 1,400.[18]

[241] The production of most of the chief crops of the Recôncavo is somewhat stabilized by steady demand for food--in the case of manioc, corn, and beans—or by government control—in the case of sugar cane. In contrast, tobacco is a highly speculative and mobile crop. It is produced primarily by small cultivators in anticipation of a combination

[TEXT CONTINUED ON PAGE 172]

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

245 311 small coffee groves occupied as much as one-third of the total cultivated area (Map 56). In São Félix coffee was the second ranking crop in area of cultivation, in São Filipe, the third. The coffee cultivation in these municípios is concentrated along the eastern side of the tobacco-manioc area, on the rough Intermediate Hills. The slope-land [134] [132] soils are relatively fertile; yet there is not too much precipitation for the harvesting and drying of the beans.

Although coffee production in the "coffee zone" beyond the Recôncavo is on a moderately large scale, within the Southwestern Recôncavo coffee is planted in very small, irregular plots. The coffee is shade-grown, usually under a remnant of old mata or under jackfruit and similar trees. Except in São Filipe and São Félix, it is generally cultivated as an auxiliary rather than as a principal crop. The harvest is non-selective, and the entire bush is stripped at one time. 245 311 The beans produced under this system are of low quality compared with the selected beans of the Spanish-American highlands, but the people of 433 Bahia claim that their coffee has a special flavor. The mean yield of coffee in the Recôncavo in 1948 was about 300 kilograms per hectare, compared to over 400 kilograms per hectare for Brazil. The main center of production had yields near the mean of 300 kilograms per hectare, except for São Filipe which produced less than 200 kilograms per hectare (Map 57). Yields, as derived from the official data, were highly variable among the minor producers.

245 Cocomut. In a sense the coconut is, like coffee, an alien intrusion into the Recôncavo. Although Bahia is by far the leading producer of coconuts in Brazil—they are called côcos da Bahia—the main centers of production are on the coast north and, to a lesser extent, south of the Recôncavo.

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

Footnotes - Chapter V

000 [1]The outstanding example of the ribbon development of cropland is along the highway which traverses the Crystalline Uplands from Santo Antônio to Feira de Santana. Each of the cidades along this road—Conceição do Almeida, Cruz das Almas, Muritiba, São Félix, Cachoeira, Conceição da Feira, and São Gonçalo—is the center of an intensively cultivated zone and is connected with the others by a belt of cropland running along the highway. In part this ribbon development is the result [133] of restrictive factors; in Conceição da Feira and São Gonçalo the intensively cultivated strip runs between the rough Intermediate Hills on the [132] east and the dry caatinga on the west. The same negative relationships are characteristic of the Southwestern Recôncavo, but the intermediate zone of acceptable terrain and climate is here broader than in the north.

[2]Produção Agrícola: 1948.

[3]Ministério da Agricultura, Serviço de Estatística da Produção, "Pobulação Pecuária, Em 31/12/1948."

[4]For a map of manioc production in Latin America, see: Office of Foreign Agricultural Relations, Map of "Manioc Estimated Production Latin America," Agriculture in the Americas, Vol. III, Nos. 8-9 (August-September, 1947), p. 120.

[128] [5]A more detailed discussion of processing of farinha de mandioca is given in Chapter X.

[6]Ruth Matos Almeida Simões, "Comentário do Mapa da Produção de Mandioca no Estado da Bahia," Boletim Geográfico, Vol. XI, No. 112. (January-February, 1953) pp. 84-86.

[7]It is likely that the official figures underestimate the area and production of manioc. A considerable part of the crop is grown on small plots remote from political centers and well-traveled routes and may thus have escaped the enumerator. Moreover, its cultivation is so commonplace and its exchange often so local and in such small quantities that even tax-conscious local government officials may easily be unaware [127] of small and scattered plots which in sum may bulk fairly large. Some of the official data which have been used in the analysis of manioc cultivation, production, and value have been modified. For a discussion of these modifications and for maps based upon the unmodified data, see Appendix D.

[8]Conceição do Almeida, Cruz das Almas, and São Filipe.

[9]This popular and official view underestimates the importance of [128] manioc production in its own right. The commercial element in manioc production is discussed in Chapter IX.

[128] [10]The system of manioc cultivation will be discussed in conjunction with the tobacco-manioc system in Chapter VI.

[245] [11]The "coffee zone" of Bahia includes a number of municípios, fro Laje (adjoining Santo Antônio) to Jequié along the Estrada de Ferro Naza

1:Haskins K-4,5 (1952-1954) 1956 SO11 Bahia Brazilians SO11

249 [457] purchased in Europe at the expense of precious foreign exchange, tobacco can be processed for the trade with only a shed and a few crude presses. [489] Rather than a relatively expensive rail net to assemble the crop, tobacco can be carried by truck, small boat, or even by pack animal. More- [433] over, since the cultivation of tobacco is integrated with the production of food and is primarily an activity of small farmers, it is possible to adjust the size of the crop from year to year with a minimum sacrifice of capital investment.

277 The tobacco industry of the Recôncavo has a number of disadvantages as a base for commercial development which may be summarized as problems of: (1) land; (2) markets; and (3) system of production.

249 311 Leaf tobacco production in the Recôncavo and in the adjoining areas of Bahia is confined to a narrow belt between the humid edges of the Up- [134] lands and the dry interior of the state. An expansion toward the coast would bring tobacco first into the Intermediate Hills where the upland soils which are preferred for tobacco cultivation are of limited area and then into the humid lowlands in which the Cretaceous soils are unsuitable, apparently, for the cultivation of quality leaf tobacco [132] and in which the Tertiary soils are extremely infertile. An expansion westward would bring tobacco into an area where the precipitation in [134] most years is inadequate. The interior north of the tobacco area is dry and has very poor soils, the Tertiary upland soils. There is an [137] opportunity for the further expansion of the cultivation of tobacco toward the southwest along the forest and scrub forest boundary into a region which produces the same general type of tobacco as the Southwestern Recôncavo--the "Mata" grade. This apparently is the meaning of the increased tobacco production in Santo Antônio. It should be possible, at least as far as the soils and climate are concerned, to continue the expansion toward the southwest into the adjoining

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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311 soils under more dependable rainfall conditions than are characteristic of the other zones.

The "Caatinga" zone includes Santo Estêvão, Castro Alves, Ipirá, and Santa Teresinha--the município west of Castro Alves. When the rains [132] [134] of the growing season--June, July, and August--are plentiful, these tobaccos are much like those of the "Mata" zone, though somewhat harsher--probably because of the more saline soils. If precipitation is scarce, the tobacco is gummy and requires long curing--two years or so--before use. If the rains fail entirely, a second attempt may be made to plant during the summer rains of November, December, and January.

The "Feira" zone includes Feira de Santana, Coração de Maria, Irará, Alagoinhas, Catu, Pojuca, northeastern Santo Amaro, and northern São Sebastião, as well as Inhambupe, Entre Rios, and Serrinha. "Feira" leaf is often large, rather dark, and moderately strong, and requires [132] at least two years for curing. Like the "Caatinga," its quality varies in response to changes in precipitation, but in general it is more uniform.

"Sertão" tobacco is highly diverse in type and quality. Its zone of production is large in size, extending west to the Chapada Diamantina and southward beyond the Rio de Contas. Generally this leaf is large and coarse, but as a result of the diverse physical conditions in the scattered areas in which the crop is produced, the quality of the leaf is variable over a wide range.

2: Hutchinson E-4, 8 (1950-1951) 1957 SO11 Bahia Brazilians SO11

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tant centers of colonial life, and until 1763 Salvador was the capital of the Portuguese colony.

The Recôncavo helped to make Brazil a unique part of the Portuguese empire in the sixteenth century. Brazil was different from any of the other Portuguese colonies, for its wealth proved to lie in agriculture rather than in trade, as was the case in India and Africa. The Bay of All Saints, with a circumference of 200 kilometers, is in effect an inland sea, the entrance to which can be guarded from the heights on which the city of Salvador is situated. There are a number of picturesque islands throughout the bay, with good beaches and landing facilities. Many small rivers empty into the bay, and numerous creeks navigable at high tide extend further inland along its shores. The presence of such a large network of navigable waters was an important factor in the rapid development of the Recôncavo, providing easy and inexpensive transportation of sugar to the point of shipment to Europe.

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The climate is semitropical, with two seasons. Summer, from September to sometime in March, is relatively dry, dotted by showers and thunderstorms and cooled by fresh breezes blowing in from the Atlantic. Winter begins in April, lasting until August or September, the exact time of change differing from year to year. This season is marked by continued rain, usually a soft, constantly falling drizzle or light rain, interspersed with heavy showers, as front after front moves in from the Atlantic, dropping its moisture before being pushed upward by the abruptly rising land which surrounds the Recôncavo. According to statistics for the years 1914 to 1938, the months of minimum rainfall are October, November, and December; during this time the average rainfall was 11.81 inches. The period of maximum rainfall is April, May, and June, with an average of 35.83 inches for the three-month period. The yearly average from 1914 to 1938 was 65.93 inches.[1] The temperature range is from 70 to 90 degrees Fahrenheit.

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The soil of the Recôncavo, especially that of the sugar-Recôncavo, is extraordinarily fertile. It is a heavy black soil, known as massapé, approximately 6 inches to 2 feet thick, covering a clayey subsoil, known locally as taguá. Here and there are outcroppings of sand and mixtures of sand with clay.

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1. Atlas pluviometrico do Brasil (Rio de Janeiro, 1914-1938).

mers. However, on almost every plantation there are brick-lined springs from which the inhabitants get their drinking water. Women or children carrying five-gallon cans of water on their heads, and donkeys carrying four wooden kegs of water, are common sights along the roads of the Recôncavo. For the cattle and other livestock of the plantations, drinking places are excavated wherever there promises to be enough water. Frequently, however, these go dry in the summer, especially during the drought years which occur cyclically in rhythm with the droughts of the sertão. At such times loss of cattle is prevalent, except on plantations situated near one of the small rivers.

A high-voltage electric line passes through this section leading from the generating station further inland to the capital city. Recently most of the plantations have been able to connect with this line, so that at least the owners' houses have electric light. The houses of the workers are without it except at the factory, where the mill supplies its own electric power which is carried to almost all the workers' houses.

There are four state schools and one county school distributed among the plantations. The central school in the town of Vila Recôncavo is not attended by children from the plantations. Two plantations have their own chapels, which are visited at irregular intervals by the priests of Vila Recôncavo. On the other plantations a small altar is set up in the owner's house for special occasions such as Christmas, when the town priest is invited to celebrate the Mass.

There is in the town a medical post with a visiting doctor, a dentist, and several nurses in training, which is administered by a Franciscan lay brother and supported by federal, state, and county funds and by private donations. This post is fairly recent, and its influences are spreading only slowly to the rural area. Also in the town is a small county medical post run by a resident physician. The sugar factory has a dispensary with a nurse and is visited by the town doctor. Almost every plantation has its own first-aid equipment, generally in the owner's house.

There are no fairs in the community. There are stores in the town and a large supply store at the factory, run by the corporation, and nearly every plantation has its own small store. Major purchases are made at the weekly market in Centro, in the neighboring county. There are also traveling ped-

VILA RECÔNCAVO

[Town Life]

227

is very rough, though strong. Most of the men complain about it, for it cuts their hands when they are fishing and the action of salt water on the cuts inflames their hands badly.

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There are between seventy-five and one hundred canoes in Vila Recôncavo, of all sizes, from 16 to about 50 feet long. They come from the southern part of the state, and cost between Cr$1.000,00 and Cr$6.000,00 apiece, depending on their size. They are made of vinhatico preto, a large tree [313] from which an entire canoe can be hollowed out. As the canoes grow older, they are strengthened inside by the addition of ribs. The center support (pé do banco) has a hole in it through which a mast can be stepped for sailing. The fishermen use a variety of sails, but usually a simple square sail called traquête. Four flour sacks sewn together make a passable [428] square sail. The canoes last a long time and are handed down from generation to generation. A hundred years is not an uncommon age for such a craft.

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The majority of fishermen cannot swim well and have a great respect for the water on two counts: the water is deep, 226 which to them implies danger, and it is said to hide large, [481] man-eating fish. There are stories of three men who have disappeared in the last few years, snatched away by fish. One [825] was a baixador, and the other two fell overboard. Falling is not uncommon, for often a man steps on a small fish on the bottom of the canoe or simply slips on the wet wood, loses his balance, and goes overboard, as the canoes are narrow-beamed and unstable. In their canoes they are fearless, and will go anywhere in any weather. Severe storms which arise suddenly are ridden out in the canoe, which generally lies at anchor while the men lie under cover of the sail, peering out occasionally to see if the weather is clearing. Many of them, [164] however, become violently ill on a larger boat during a storm.

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Winter is the most productive season for fishing, although the most uncomfortable. There are many storms, and the [221] rains are more or less constant. But the fishermen say that [132] the mixture of salt water with the fresh water from small rivers emptying into the bay seems to produce many more fish than in the summer months. The fishermen dress only in a [291] pair of shorts and a straw hat when fishing, and remain in the [164] cold rain for hours on end. Colds are common among them, as is rheumatism among the older men.

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There is always a market for fish. There is a discussion currently going on in Vila Recôncavo, for some of the older

4: Pierson Z-4,5 (1935-1937) 1967
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[City of Salvador]

races, and the ensuing termination is perhaps most clearly discernible.

Bahia lies in the tropics of the Southern Hemisphere, approximately thirteen degrees south of the Equator, her naturally warm and humid climate almost constantly tempered by the refreshing Southeast Trades. Located seven hundred miles above Rio de Janeiro, the Brazilian capital, and four hundred miles below the old sugar center of Pernambuco, Bahia marks approximately the mid-point of Brazil's four thousand miles of coast line which stretches from temperate Uruguay to the torrid Guianas. Some twenty-five hundred miles to the northeast lie the Gold and Slave coasts of Africa, once the home of the parents or grandparents of many present-day Bahians; directly to the east is Angola, another important source of the city's population.

In 1949 Bahia will celebrate her four hundredth anniversary. As cities go in the New World, she is an old city; in fact, one of the very oldest. Permanently founded fifty-eight years before Jamestown and thirty-five years earlier than St. Augustine, this outpost of Portuguese civilization was one of the world's richest ports long before New York had outgrown her swaddling clothes.

Here, shortly after 1500, set in the Portuguese transplantation, at first composed of adventurers, shipwrecked and deserting sailors; *degredados* banished from Portugal for criminal, political, or religious offenses; ambitious young men chosen for physical fitness and freedom from marital ties to serve in the colonial garrison; impoverished nobles seeking to recuperate fortunes squandered at the Portuguese court; a few officials, Jesuits, and secular clergy; Jews expelled by the Inquisition (who incidentally were to furnish a considerable portion of the much-needed capital for the

[TEXT CONTINUED ON PAGE 6]

4: Pierson Z-4, 5 (1935-1937) 1967
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[City of Salvador]

In the lower city lies, of course, the port, with its customs, warehouses, shipping and consular offices, banks, the marine arsenal, the post office, the Association of Commerce, the principal public market, jewelry shops, hardware and cigar stores, and most of the men's shops of the city. Up on the promontory and extending out toward the suburbs are the public buildings and most of the churches, the convents and monasteries, hotels and movie theaters, the public library, museums, professional schools, primary and secondary institutions, hospitals, women's shops, photographic galleries, furniture and dry-goods stores, confectionary stalls, the "five and tens," physicians' and dentists' offices, clubs, the principal parks and *praças*, and the residential areas of the city.

Bahia the city is the economic and political capital of Bahia the state, whose area of 342,000 square miles makes it considerably larger than Texas. The region is composed in large part of a vast plain of gneiss formation which rises abruptly from the comparatively narrow coastal belt to heights varying from 600 to 1,200 feet in the interior. Upon this plateau and running north and south across the central portion of the state lie a series of low mountains composed principally of sedimentary rock, sandstone, or conglomerates and containing such minerals as iron, manganese, copper, lead, gold, and diamonds (including the black *carbonado* so essential for tool-cutting). This mountain barrier acts as a valuable condenser, gathering moisture for a land which otherwise might be virtually desert. In the extreme western part of the state the plateau is composed of sandstone overlying limestone, and thus it provides a natural sponge which assures perennial rivers in a region where light rains and near drought alternate in six-month periods.